

CIRCULAR NO. 52.

# UNIVERSITY OF ILLINOIS Agricultural Experiment Station.

URBANA, ILL., APRIL, 1902.

## INSTRUCTIONS FOR GROWING SUGAR BEETS.

It is recommended for a trial plot that exactly one-tenth acre be planted, that this plot be two rods wide and eight rods long, that it contain twenty-five rows, sixteen inches apart between the rows, and that two pounds of seed be used for the plot. Under no circumstances should less than ten rows be planted side by side and the rows should not be more than eighteen inches apart. On our rich Illinois soil sixteen inches will be preferable. Isolated beets or beets from outside rows, or from rows wide apart have a low per cent of sugar.

**SOIL.**—Never select poor land. Use the best piece available on your farm, for the richer the soil the better the crop. New land should not be selected, as it never produces a high tonnage—it should be at least two years under cultivation. Land which was manured for the previous crop will be preferable. Under no circumstances should coarse, fresh manure be applied to the ground in the spring. Any well rotted manure may be used.

**PLOWING.**—In case the plowing has not been done in the fall, *plow as early in the spring* as the ground will do to handle without sticking, *for three reasons*: 1st, because the sooner the weeds are encouraged to grow the more of them can be killed before planting the beets; 2d, because land plowed while the weather is cool will retain the moisture much longer than it will if plowed during warm weather; 3d, because it is much better to allow the ground to settle as much as possible after plowing and before preparation of seed bed so that it will become thoroughly packed, thus insuring better and quicker germination. In the spring never throw up soil that

has not been stirred before; if your soil has never been plowed over 6 inches it is better to use a subsoil plow to loosen the ground *in the furrow 4 or 5 inches deeper*. These instructions refer only to spring plowing; when good land with deep soil is plowed in the fall, it makes no difference how much new soil is turned up as it would decay in winter through the action of the frost. After spring plowing harrow or float, once immediately, and then leave the ground as it is *until the time to prepare the seed bed, thus allowing the weeds to sprout*. If the previous crop was corn it is absolutely necessary to take the stalks and roots off the ground in the right manner in order to permit of easy and proper horse-cultivation; it will not do to plow the stalks under, however, as it can not be done effectually, the cultivator-knives bringing them back to the surface once more, and at the same time dragging along with them more or less of the small beet plants.

**PREPARATION OF SEED BED.**—Land that has been fall-plowed must be harrowed as soon as the frost is out of the ground and the soil is dry enough to prevent sticking. This work will level the ground, thereby holding the moisture in the soil, and increase the germination of the weeds, etc. *Here is where most failures occur*, and if weeds are allowed to get a start the cultivation of the crop will involve much unnecessary and expensive hand-work. *Therefore to prepare a good seed bed*, we advise working the soil four or five inches deep with a pulverizer, or better yet with a corn cultivator, once lengthwise and once crosswise, making sure not to miss any spot in the field as it is necessary to loosen any weeds that may have already sprouted. Then harrow lengthwise and crosswise to level the soil perfectly and finish killing the weeds. After this pack the top soil (2 to 3 inches) well, if possible with a heavy roller. The better the soil is packed *after the weeds are killed*, the better the beet seed will sprout.

**SEEDING.**—*To secure a full yield it is absolutely necessary to have a good stand*. The time of planting depends largely upon the season, it being generally from about April 25th to May 25th, or about the season of corn planting. Twenty pounds of seed per acre should be used to secure a good stand under all conditions. If planted by hand, drop three seeds in a place, every eight inches in the row. *Never plant over three-fourths of an inch deep*, but see that the earth is well packed around the seed, because by pressing the surface the necessary moisture for germinating in a dry season is drawn by capillary attraction out of the deeper soil. The heavier the soil

and the earlier the planting, the shallower must the sowing be in order to prevent the seed from rotting in the ground. The deeper the seed is planted, especially in heavy soil, the weaker the plants will be if they come up at all. *Therefore avoid deep planting.*

CULTIVATING.—This work is best performed with one-horse cultivators, but in case of small patches for trial purposes hand cultivation alone may be practiced if necessary. If, after sowing, a heavy rain should cause a crust to form on the soil it should be broken by hand hoeing, care being taken to not injure the young beets. As soon as the beets break through the ground and the rows can be followed the cultivation *must* begin, *the earlier the better*, not only to destroy the weeds but to loosen the soil, which permits the air to penetrate, thus forcing the growth of the beet and improving its quality. It is very important *to kill the weeds before they get above the ground*, or at least before they become well rooted. This can be easily accomplished by cultivating or hoeing every week, care being taken to cultivate as close as possible to the rows, as long as the beets are small. As the beets grow older, however, the shovels should be run gradually further away from the beets, and also deeper until the leaves meet in the center between the rows, by which time the cultivation should have reached a *depth of four to six inches* and should then cease as the beets are ready to lay by. Besides destroying the weeds this repeated cultivation promotes nutrification in the soil and secures a good and healthy growth. *Never hill your beets*, as level land keeps the moisture best.

THINNING OUT.—Care should be exercised in doing this part of the work as it is the most important of all the cultivation and care of the crop. It is very necessary that this should be done just at the right time, and the sooner it is done the better for the growth and yield of the crop. As soon as the beets have four leaves they should be thinned and must not remain longer than one week without thinning, as the roots will entwine around each other, if left longer, and make the thinning detrimental to the plant that is left. To perform this work, *the beets should be bunched (directly after a horse-cultivator) with an ordinary 6-inch hoe, cutting six inches of beets out and leaving a two-inch bunch containing from 3 to 6 beets.* After the beets are bunched the healthiest plant in each bunch is selected by the thinner to be left standing, the others being pulled out by hand, together with all the weeds near by. This operation will leave one plant every eight inches *and the ground should be pushed up well around each beet*, but not packed.

**HOEING.**—As the ground will have become packed during the bunching and thinning, thus preventing proper circulation of air, and the young plants, moreover, will have become weakened by their disturbance, a hoeing should be given a few days after thinning, care being taken to kill the weeds close to the plant but in such a manner as not to loosen or injure the beets. As the cultivator only loosens and clears the ground between the rows, the hoe must perform this work between the different plants. A similar hoeing may be necessary twice after this, the last depending upon the freedom from weeds, also upon whether the ground is loose enough to enable the roots to grow. Both of the last hoeings should be as deep as it is possible to make them without injuring or loosening the plant. Under ordinary circumstances no work should be necessary in the field after eighty days from the time of planting except the final and deepest horse-cultivation.

**HARVESTING.**—By the middle of October the beets are usually ready to harvest. As the beets increase in tonnage mostly in September and the first part of October the harvesting should not be before the middle of October. It should not be later than the last of October. The beets should all be harvested, the crowns cut off where the lower ring of leaves come out, the topped beets placed in a weighed wagon, hauled to the nearest wagon scales and weighed. *Remember this is your part of the experiment.* It is especially important that you get the exact yield as the factory builders accept no man's guess. The crop from one-tenth acre will not be a very large load as a rule.

**SAMPLES FOR ANALYSIS.**—Select ten average beets from inside rows. (Don't select small immature beets or large overgrown beets, as they are both very poor in sugar content. Good beets should weigh about one to one and one-half pounds after being topped.) Carefully wash the ten beets, wrap them up separately in plenty of paper, pack them all in a box or in a strong cloth sack, place this report in an envelope and put it in the box or sack with the beets and ship them immediately by express to

PROF. C. G. HOPKINS,  
Agricultural Experiment Station, Urbana, Ill.

If the beets with the report are received in good condition they will be analyzed and the analysis reported back to the grower.

**RECORD.**—Keep a careful record of the experiment on this blank. (If this circular should be lost write at once to the Experiment Station for another.)

RETURN THIS LEAF WITH THE SAMPLE OF BEETS TO  
C. G. HOPKINS, EXPERIMENT STATION, URBANA, ILLS.

Variety of beets.....

Kind of soil.....

When and how manured.....

Kind and yield of previous crop.....

Number of rows of beets planted.....

Length of rows.....feet

Distance between rows.....inches

Size of plot (width).....(length).....rods

Date of planting.....

Number of beets grown in one average row.....

Number of beets grown in another average row.....

Date of harvesting.....

Exact yield of topped beets from the plot.....pounds

Was the cultivation clean and good?.....

Insect injuries.....

Blight.....

Do you think you could profitably grow sugar beets for a factory if  
guaranteed \$4.00 a ton for topped beets on cars?.....

How many acres would you grow?.....

Do you wish to try another experimental plot next year?.....

Name of grower.....

Post office.....

County.....

Put other remarks on back.....